finding game plentiful. On the 30th of July a point was reached where canoe navigation ceased on account of shoal water, and the two men proceeded on foot. Near the head-waters, instead of mountains, there were elevated moorlands, with scanty vegetation and destitute of timber. The source of the branch ascended was found to be a small lake surrounded by snow-banks, and supposed to be about 400 miles from the coast. The natives, of whom about 250 live on the river, were friendly, and the return voyage was made without accident. The run down the river was very exciting owing to the numerous rapids and impediments. The party reported on board the Corwin August 27. The voyage, which was extremely creditable to those who took part in it, is noteworthy, as the party reached the highest latitude yet attained by white men in the interior of this part of Alaska. The report and charts which are being prepared for the department will doubtless fill a large part of the blank space which occupies the best maps of this area.

A letter from Mr. Henry D. Woolfe, who has been during the past year stationed at Cape Lisburne on the arctic coast north of Bering Strait, states that the winter there had been a mild one, February being the coldest month, with a minimum for the winter of — 45° F. There were many heavy southerly gales during December, January, and February. The range of hills in which the Noätak or Nunatak River rises was in a direction E. N. E. mag. only three days from the station. In February and March he travelled along the coast from Cape Lisburne to Hotham Inlet, and ascended the Noätak on the ice about thirty miles to a village of Innuit. Between the Corwin Lagoon and Cape Krusenstern a river falls into the sea, which he was informed was connected with the Noätak, running behind the hills which lie back of Shesholik village. Mr. Woolfe is preparing a map showing all the native settlements and even single huts temporarily occupied along the coast between Cape Krusenstern and Point Barrow. He had discovered several new coal veins, and, in fact, found a region about twenty miles square that was a continuous coal-field, the coal belonging geologically to the carboniferous age, and being easily got at, and of excellent quality. It has long been used for fuel by the whalers, and the Pacific whaling company are having it mined to supply their steam whaling vessels.

ASTRONOMICAL NOTES.

Small versus large telescopes.—Mr. Denning's crusade in favor of small telescopes seems to have come to a rather inglorious ending in the closing sentence of his letter (*Observ.*, '85, 305), which reads, "The efficacy of small instruments comes in where it is desirable to have that critical sharpness of the image resulting from a suitable blending of aperture and power with atmospheric conditions," whatever that may mean. The truth would seem to be, that very much of what observers with small telescopes call 'sharp definition' is merely the smoothing out of actual minute irregularities, or very slight unsteadiness, which limited aperture is powerless to separate or define, on account of the overlapping diffraction circles or bands, which necessarily constitute the image of every point or line. One matter, however, might with profit be further investigated, and that is, whether the larger cylinder and cone of rays from a large aperture materially increase the disturbance of the image when the seeing is bad. Perhaps the most amusing feature of the whole discussion is where Mr. Denning (*Observ.*, '85, 207) fails to grasp the sarcasm of Professor Hall's communication (*Observ.*, '85, 174), and takes it as written in sober earnest.

Comet 1885. III. (Brooks).—The comet found by Brooks on August 31 appears to have passed perihelion about three weeks before discovery. According to three independent sets of elements, perihelion passage occurred on August 10, the comet being then at a distance 0.75 from the sun (the earth's distance from the sun being unity). The nearest approach to the earth seems to have occurred about September 25. Even at its best, the comet seems to have been a very unsatisfactory object to the observer; and it can probably be seen now only in the more powerful telescopes. It is less than a third as bright as on September 5. The observations thus far published extend to about the middle of September, and the comet is generally described as round, faint, increasing a little in brightness toward the centre, without definite nucleus or tail, and some two or three minutes of arc in diameter. We should mention that Mr. A. A. Common, of Ealing, England, is reported to have discovered the comet independently on the evening of September 4.

New variable in Cygnus.—Mr. J. E. Gore announces (*Astr. nachr.*, 2683) that the red star Birmingham 587, south-following ρ Cygni, varies between 5.8 and 7.5 magnitudes, in a period of about 250 or 300 days, the last maximum having been in December, 1884. The star is Lal. 42153 and D.M. + 44°, 3877.

Common decimal unit of circular measure.—It seems that the recent somewhat sensational announcement (*Nature*, xxxii. 465) of a supposed rapid proper motion in Nova Andromedæ arose from the failure of an English amateur to distin-

guish between seconds of arc and of time. Although an inexcusable blunder, yet it serves to emphasize anew the intolerable nuisance of this double unit, and makes us wish for the speedy coming of the day when all kinds of circular measure shall have a common convenient unit; when every watch and clock face, every graduated circle, and every logarithm-table of the trigonometric functions, shall be divided into decimals of the circumference.

Gould's Zone catalogue.—The Argentine government have presented the stereotype plates of this valuable catalogue to the Astronomische gesellschaft, with authority to use them for a new edition whenever it is needed.

NOTES AND NEWS.

THE National academy of sciences will hold its autumn session in the capitol at Albany, beginning November 10, at eleven o'clock. The session will probably continue three or four days.

— The Lowell free courses in the Teachers' school of science, under the auspices of the Boston society of natural history, will begin on November 7, with a series of lectures by Prof. A. Hyatt on the structure and habits of typical animals.

— Despatches from Paris, under date of Oct. 27, announce that at the meeting of the Academy of sciences, held that day, M. Pasteur furnished proof of his theory that inoculation was easily practicable, and had been successful in preventing hydrophobia. Dr. Vulpian gave additional proofs confirming the deductions of M. Pasteur.

— Mr. F. W. Putnam has been chosen Peabody professor of American archæology and ethnology under the Peabody trust at Harvard university.

— The October number of the Harvard university bulletin contains continuations of the very useful index to the maps in the London geographical society's publications, and a further instalment of the bibliography of the Kohl collection of early American maps.

— *Lippincott's magazine* for November contains a well-written article on the Peabody museum of archæology at Cambridge, by Ernest Ingersoll.

— Henshaw's list of the Coleoptera of America north of Mexico, just issued, includes 9,238 species. Crotch's check-list, published in 1874, contained 7,450 species. Previous to these came the lists published by Le Conte, and in 1880 Austin published a supplement to Crotch, bringing the number of nominal species up to 9,704, which recent studies have greatly reduced.

— The Johns Hopkins university *circular* for October is entirely devoted to the summer work of the Chesapeake zoölogical laboratory at Beaufort, N. C., and contains interesting summaries of investigations upon the embryology of a variety of invertebrate marine animals, and on the physiology of some of the lower vertebrates. An interesting 'Note on inheritance,' by the director, Dr. Brooks, is added, containing a rejoinder to some criticisms that have appeared on the author's work on 'Heredity,' together with a short letter from Fritz Müller, discussing the question of heredity among the Brazilian species of Melipona.

LONDON LETTER.

THE prospects of the Marine biological association are now beginning to shape themselves somewhat definitely. A suitable site for a laboratory has been obtained at Plymouth, and the building committee, which consists of the officers, together with Mr. John Evans and Mr. Spence Bate, will meet shortly to make a final decision upon the plans which they will recommend to the council. The subscription list has not received many additions of late; but it is hoped that further contributions may be obtained, when the public can form a better idea of the nature of the building and its uses than is the case at present. A grant of money will probably be given by the treasury toward the expenses of the station, provided that it is brought into relation with the Scotch fisheries board, the duties of the English fish inspectors being limited to the salmon fishery only.

A considerable amount of criticism has been excited in biological circles by the action of the government in abolishing the professorship of natural history at the Normal school of science, South Kensington. The chair has hitherto been filled by Professor Huxley, who has lately retired in consequence of ill health; and as the salary attached to it is greater than that of any similar post in England, it has always been regarded by the younger school of zoölogists as the highest object of their ambition. Now, however, this will be no longer possible. English zoölogical teachers are left without an official head, and the flow of promotion has received a sudden check. It had been generally thought that the chair would be given to Professor E. Ray Lankester, who is well known not only as a distinguished investigator, but also as a teacher of no ordinary power. His claims, however, have been altogether passed over. The professorship has been abolished, and a